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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Application Number: 10/722,038
Filing Date: November 24, 2003
Appellant(s): PECK, JEFF

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For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 11/02/2009 appealing from the Office action mailed 06/08/2009.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

5,920,834	Sih et al.	7-1999
6,865,162	Clemm	3-2005
7,346,005	Dowdal	3-2008
2004/0073692	Gentle et al.	4-2004

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

4.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject

matter as a whole would have been obvious at the time the invention was made

to a person having ordinary skill in the art to which said subject matter pertains.

Patentability shall not be negatived by the manner in which the invention was

made.

5.   Claims 1, 5, 7, 9, 13, 14, and 19 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Gentle et al. (US 2004/0073692) in view of Dowdal (US 7,346,005).

As to claims 1 and 14, Gentle teaches a method, comprising:

receiving a plurality of packets (see [0036], VAD monitors packet

structures in incoming digital voice stream) with audio information (see Abstract,

audio stream, also see [0036], voice) (e.g. Applicant defines audio information to

include voice and silence (see page 4, [0006], lines 3-5). Audio packets are

retrieved.);

determining by a voice activity detector (see [0036], VAD 220) whether

said audio information represents voice information (see [0036], VAD determines

if voice activity is present) (e.g. The determination of the audio information is

found by the voice activity detector 220.); and

buffering said audio information in a jitter buffer (see Figure 3, buffer

manager 330) during said determination (see [0051], [0052], [0042], [0061],

where the packets are received by the VAD based on incoming stream and the

packets and packet structure and sends it to agent 232 where a packet is

received one at a time and the buffer receives the packets to be buffered upon

receipt) (e.g. It is obvious to one of ordinary skilled in the art that as the VAD

outputs the packets (see Figure 2, output of 220) and sends it to the second

device (Figure 3, input into buffer 302) that when new audio data is received by

the first device that processing by the VAD will occur while the previous packets

are being buffered. Support for this in Gentle is seen in [0052], where the VAD

monitors for new data) (e.g. The sending of the jitter delay from the adaptive

playout unit further supports the determining (VAD decision) and jitter buffering

being done concurrently.). The reference also teaches the use of a computer

entailing a computer readable medium for the above limitations (see [0030]))

(e.g. Audio information is buffered.).

wherein said determining comprises:

receiving frames of audio information at a voice activity detector (see

[0036], packet structures are received);

measuring at least one characteristic (see [0051], [0036], and [0004],

where the Reference discloses convention technique and shows an alternative

based on silence threshold to determine voice activity and energy level

measurements) of said frames (see [0036], packet structure)

determining a start of voice information based on said measurements (see

[0052], VAD 220 determines silence or nonsilence as well as beginning and

endpoints); and

determining an end to said voice information based on said (see [0052],

VAD 220 determines silence or nonsilence as well as beginning and endpoints)

and a delay interval (see [0051], timing measurement module used to determine

jitter by VAD 220); and

      sending the adjusted packets to a voice codec (see [0075], where the

adaptive playout unit is placed before the codec and in [0043], [0045], the jitter

timing module has an adaptive control of FIFO delay) (e.g. It would have been

obvious to one of ordinary skilled in the art to have used this embodiment in

order to for the playout unit to receive encoded packets rather than decoded

packet, where additional delay is present due to processing.).

      adjusting of the delay interval (see [0043], timing measurement module

allows adaptive control of FIFO delay)

      However, Gentle does not specifically teach the measuring, adding, and

adjusting of the delay interval based on an average packet delay time.

      Dowdal teaches

      measuring an average packet delay time by said jitter buffer (see Dowdal,

(see col. 4, lines 33-60, delay between packets are calculated and a calculated

running average is maintained in order to reset the value of the FIFO buffer for

playout)

      adding said average packet delay time to each of the plurality of packets

prior to sending the plurality of packets (see col. 2, lines 42-44 and col. 3, lines

34-41, where the playout delay is adjusted based on the calculated delay value.

It is implied in Dowdal that the calculated delay is added (either a negative or

positive value is applied).

the adjusting said delay interval to correspond to an average packet delay time (see col. 4, lines 33-60, delay between packets are calculated and a calculated running average is maintained in order to reset the value of the FIFO buffer for playout).

It would have been obvious to one of ordinary skilled in the art at the time the invention was made to have modified the voice based packet network as taught by Gentle with the use of a delay based on the average packet delay time as taught by Dowdal. The motivation to have combined the two references involves the improvement in audio quality for effective playout of audio by minimizing jitter and delay (see Dowdal, col. 1, lines 15-21).

As to claim 5, Gentle in view of Dowdal teaches all of the limitations as in claim 1, above.

Furthermore, Gentle teaches said characteristic comprises an estimate of an energy level for said frame (see [0051], energy level measurement can be employed by VAD 220) (e.g. An energy level is used to determine if speech is present.).

As to claim 9, Gentle teaches a system comprising:

an antenna (see [0030], radio, telephone, wired analog, etc.)(e.g. It is inherent that digital phones consist of built-in antenna as well as a receiver for hearing audio information and transmitter for transmitting information.);

a receiver connected to said antenna (see [0030], radio, telephone, wired analog, etc. and see Figure 3, 228, receives information from first user and [0040]) to receive a frame of information (e.g. The receiver receives the packets of information from first user)

a voice activity detector (see [0036], VAD determines if voice activity is present) to detect voice information in said frame see [0036], VAD monitors packet structures in incoming digital voice stream) (e.g. The determination of the audio information is found by the voice activity detector 220.); and

a jitter buffer (see Figure 3, buffer manager 330) to buffer said information during said detection by said voice activity detector (see [0051], [0052], [0042], [0061], where the packets are received by the VAD based on incoming stream and the packets and packet structure and sends it to agent 232 where a packet is received one at a time and the buffer receives the packets to be buffered upon receipt) (e.g. It is obvious to one of ordinary skilled in the art that as the VAD outputs the packets (see Figure 2, output of 220) and sends it to the second device (Figure 3, input into buffer 302) that when new audio data is received by the first device that processing by the VAD will occur while the previous packets are being buffered. Support for this in Gentle is seen in [0052], where the VAD monitors for new data) (e.g. The sending of the jitter delay in [0051] from the adaptive playout unit further supports the determining (VAD decision) and jitter buffering being done concurrently.), sending the adjusted packets to a voice codec (see [0075], where the adaptive playout unit is placed before the codec

and in [0043], [0045], the jitter timing module has an adaptive control of FIFO

delay) (e.g. It would have been obvious to one of ordinary skilled in the art to

have used this embodiment in order to for the playout unit to receive encoded

packets rather than decoded packet, where additional delay is present due to

processing).

wherein said voice activity detector receives frames of audio information,

measures at least one characteristic of said frames (see [0051], [0036], and

[0004], where the Reference discloses convention technique and shows an

alternative based on silence threshold to determine voice activity and energy

level measurements and (see [0036], packet structure), determines a start of

voice information based on said measurements (see [0052], VAD 220

determines silence or nonsilence as well as beginning and endpoints),

determines an end to said voice information based on said (see [0052], VAD 220

determines silence or nonsilence as well as beginning and endpoints) and a

delay interval (see [0051], timing measurement module used to determine jitter

by VAD 220), adjusting of the delay interval (see [0043], timing measurement

module allows adaptive control of FIFO delay)

However, Gentle does not specifically teach the measuring, adding, and

adjusting of the delay interval based on an average packet delay time.

Dowdal teaches

measuring an average packet delay time by said jitter buffer (see Dowdal,

(see col. 4, lines 33-60, delay between packets are calculated and a calculated

running average is maintained in order to reset the value of the FIFO buffer for

playout)

adding said average packet delay time to each of the plurality of packets

prior to sending the plurality of packets (see col. 2, lines 42-44 and col. 3, lines

34-41, where the playout delay is adjusted based on the calculated delay value.

It is implied in Dowdal that the calculated delay is added (either a negative or

positive value is applied).

the adjusting said delay interval to correspond to an average packet delay

time (see col. 4, lines 33-60, delay between packets are calculated and a

calculated running average is maintained in order to reset the value of the FIFO

buffer for playout).

It would have been obvious to one of ordinary skilled in the art at the time

the invention was made to have modified the voice based packet network as

taught by Gentle with the use of a delay based on the average packet delay time

as taught by Dowdal. The motivation to have combined the two references

involves the improvement in audio quality for effective playout of audio by

minimizing jitter and delay (see Dowdal, col. 1, lines 15-21).

As to claim 13, Gentle in view of Dowdal teaches all of the limitations as in claim

9, above.

Furthermore, Gentle teaches said voice activity detector further comprises

an estimator to estimate energy level values (see [[0051], energy level

measurement by VAD 220) (e.g. Energy levels are estimated.);

a voice classification module connected to said estimator to classify

information for said frame (see [0051], VAD 220 classifies based on silence or

non-silence)

6.   Claims 2, 3, 12, 15, and 16 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Gentle in view of Dowdal, as applied to claims 1, 9, and 14 above,

in view of Clemm (US 6,865,162).

As to claims 2 and 15, Gentle in view of Dowdal teach a voice based packet

network.

However, Gentle in view of Dowdal. does not specifically teach the

buffering of a portion of said audio information in a pre-buffer for a predetermined

time interval.

Clemm does teach the use of a buffer (see col. 2, line 31) for a

predetermined time (see col. 2, lines 31-33) prior to said determining (see Figure

1, elements 110 and 120 and col. 2, lines 30-37) (e.g. A pre-buffer is used.).

It would have been obvious to one of ordinary skilled in the art at the time

the invention was made to have modified the voice based packet network as

taught by Gentle in view of Dowdal with the buffer before the voice activity

detector as taught by Clemm. The motivation to have combined the two

references involve the elimination of clipping associated with voice activity

detector directed during silence suppression (see Clemm col. 2, lines 47-48).

As to claims 3 and 16, Gentle in view of Dowdal teaches all of the limitations as

in claims 1 and 13, above.

Furthermore, gentle teaches sending said information from the jitter buffer

to an end user (see Figure 3, second user, 312) (e.g. The applicant denotes the

endpoint to be defined as the human user (see Applicant's Specification, page 8,

[0018], lines 5-6).(Further, the sending of audio information to the user from the

pre-buffer would have been apparent with the teaching presented by Clemm to

avoid clipping).

As to claim 12, Gentle in view of Dowdal teach all of the limitations as in claim 9.

Furthermore, Gentle in view of Dowdal *et al.* teach a voice packet based

network.

However, Gentle in view of Dowdal do not specifically teach the buffering

of a portion of said audio information in a pre-buffer for a predetermined time

interval.

Clemm teaches further comprising a buffer to store pre-threshold speech

during detection by voice activity detector (see Figure 1, elements 110 and 120

and col. 2, lines 30-37) (The reference buffers a pre-threshold speech based

upon two values, from a delay.)

It would have been obvious to one of ordinary skilled in the art at the time

the invention was made to have modified the voice based packet network as

taught by Gentle in view of Dowdal with the buffer before the voice activity

detector as taught by Clemm. The motivation to have combined the two

references involve the elimination of clipping associated with voice activity

detector directed during silence suppression (see Clemm ,col. 2, lines 47-48).

7.   Claims 8, 10, 11, and 20 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Gentle in view of Dowdal as applied to claim 9 above, and further in

view of Sih *et al.* (US 5,920,834).

As to claims 8 and 20, Gentle in view of Dowdal teaches all of the limitations as

in claim 1 and 14, above.

Furthermore, Gentle teaches retrieving a frame (see Figure 2, output of

212) of audio information from said packets (e.g. Audio information in the form of

voice is received, which has undergone pulse code modulation);

canceling echo from said frame of audio information (see echo canceller

216); and

sending said frame of audio information to a voice activity detector (see

Figure 6, output of echo canceller 216 to input of VAD 220).

However, Gentle in view of Dowdal do not specifically teach the receiving

of an echo cancellation reference signal.

Sih does teach receiving an echo cancellation reference signal (col. 6, lines 14-18) and Figure 2, echo canceller 10, z'(n) is the reference signal.);

It would have been obvious to one of ordinary skilled in the art at the time the invention was made to have modified the voice based packet network as taught by Gentle in view of Dowdal with the use of a reference signal to cancel echo as taught by Sih for the purpose of noise suppression (see Sih, col. 3, lines 5).

As to claim 10, Gentle in view of Dowdal teach all of the limitations as in claim 9.

Furthermore, Gentle in view of Dowdal teach a voice packet based network.

However, Gentle in view of Dowdal do not specifically teach the echo canceller connected to a receiver to cancel the echo.

However, Sih *et al.* does teach the echo canceller being connected to a receiver (see Figure 1, elements 14 and 10) (e.g. It is evident that a transceiver consists of a receiver and a transmitter).

It would have been obvious to one of ordinary skilled in the art at the time the invention was made to have the echo canceller connected to a receiver. The motivation to have combined the two references involves cancellation of echo for mobile phones that may occur in speech signals (e.g. see Sih *et al.*, col. 23-25) as would have been apparent in the teachings of Gentle, which describes communication between telephony devices.

As to claim 11, Gentle in view of Dowdal in view of Sih *et al.* teaches all of the

limitations as in claim 9.

Furthermore, Sih *et al.* teaches a transmitter (see Figure 1, element 14)

(e.g. Transceiver consists of a transmitter) to provide an echo cancellation signal

to said echo canceller (see Figure 1, element 10 and col. 6, lines 14-18).

(10) Response to Argument

Claims 1, 5, 9, 13, and 14 are Rejected under 35 U.S.C. §103 under Gentle in

view of Dowdal

Appellant asserts on page 24 with respect to claims 1 and 14

Applicant respectfully submits that Gentle fails to teach or suggest all of
the limitations contained in claim 1. Paragraph [0051] of Gentle teaches
forwarding the results of the jitter to the VAD. However, claim 1 teaches receiving
a plurality of packets with audio information, determining.., whether said audio
information represents voice information and buffering said audio information
during said determination. The audio information with the plurality of packets is
the same audio information at each step of the limitation. Claim 1 teaches that
the audio information is received, that the voice detector determines whether the
audio information is voice information and during the determining, the audio
information is buffered. Applicant submits that Gentle teaches a serial approach
of processing and then buffering the frame of information. Applicant submits that
claim 1 is clearly different than the teaching of Gentle.

In response to the Appellant's argument that the audio information with the

plurality of packets is the same audio information at each step of the limitation, the

examiner cannot concur. It should be noted that the present claims recite claim

language that is broad enough to include a serial approach as that of Gentle and which the Appellant admits Gentle is teaching. The Appellant is trying to distinguish over the cited prior art by claiming a parallel approach, where voice activity detection and jitter buffering is occurring at the same time for a specific packet. However, the present claims encompass both interpretations. The initial claim language reads "receiving a plurality of packets with audio information." Such limitation is broad enough to read on each packet in the plurality being associated with audio information, where the audio information is different for each packet but still represents audio information. The audio information of a specific packet is not being specifically excluded, as a plurality of packets contain audio information, which is different for each packet. Since each received packet contains audio information, the packet for which voice activity is being determined may be different from that which is buffered since only audio information is being claimed. The buffering limitation of the claim only states said audio information and does not exclude or restrict the buffering of a specific packet of audio information to be the same information for which VAD will process (i.e. the same packet with the specific audio information for which processing by the VAD is being done). Hence, the teachings of Gentle are not different from the teachings of the claim and the audio information with the plurality of packets does not have to be the same audio information at each step of the limitation.

Appellant asserts on pages 24 and 25

Applicant respectfully submits that the Examiner has not provided any support in the cited references directed to "buffering said audio information in a

jitter buffer during said determination" as recited in independent claim 1. Consequently, Gentle fails to disclose, teach or suggest every element recited in claim 1. Furthermore, Applicant submits that Dowdal fails to remedy the above identified deficiencies of Gentle. For at least these reasons, Applicant submits that claim 1 is patentable over the cited references, whether taken alone or in combination.

In response to the Appellant's argument that the Examiner has not provided any support in the cited references directed to "buffering said audio information in a jitter buffer during said determination," the Examiner cannot concur. Support was provided in light of the interpretation for a serial approach in Gentle. The interpretation for which support was provided was the processing of a single packet being analyzed by the jitter buffer and the next incoming packet being processed by the VAD, where both packets contain audio information for the plurality of packets received. Support in Gentle is provided in paragraphs [0042], [0051], [0052], and [0061] and in Figure 2, VAD 220 and Figure 3, receive buffer 336. The cited sections and Figure describe this interpretation where each incoming packet is analyzed and transmitted to the second user device and a next incoming packet is monitored and analyzed by the first user device.

Claim 14 presents similar features as in claim 1 and therefore are rejected for similar reasons as mentioned above.

Appellant asserts on pages 26 with respect to claim 9

Applicant respectfully submits that Gentle fails to teach or suggest all of the limitations contained in claim 1. Paragraph [0051] of Gentle teaches forwarding the results of the jitter to the VAD. However, claim 9 teaches a receiver to receive a frame of information, a voice activity detector to detect voice

information in said frame, and a jitter buffer to buffer said information during said detection by the voice activity detector. Claim 9 states that the same information is buffered during the detection. Applicant submits that Gentle teaches a serial approach of processing and then buffering the frame of information. Applicant submits that claim 9 is clearly different than the teaching of Gentle.

In response to the Appellant's argument that Claim 9 states the same information is buffered during the detection, the examiner cannot concur. It should be noted that the present claims recite claim language that is broad enough to include a serial approach as that of Gentle and which the Appellant admits Gentle is teaching and discussed above. The Appellant is trying to distinguish over the cited prior art by claiming a parallel approach, where voice activity detection and jitter buffering is occurring at the same time for a specific frame. However, the present claims encompass both interpretations. The initial claim language reads "a receiver ... to receive a frame of information." The VAD and jitter buffer performs functions on the same frame. However, the 5th paragraph of the claim recites "wherein said voice activity detector receives frames of audio information." The latter limitation further defines the processing of information that is done by the VAD. The limitation of "frames of audio information" is broad enough to conclude that each frame contains audio information, where each frame received in the plurality can contain different audio information. The audio information of a specific frame is not being excluded as a plurality of frames contains audio information. Since each frame contains audio information the frame for which voice activity is being determined may be different from that which is buffered. The buffering limitation of the claim only states said audio information and does not exclude or restrict the buffering of a specific frame of audio information to be the same information for which VAD will

process (i.e. the same frame with the specific audio information for which processing by the VAD is being done). Hence, the teachings of Gentle are not different from the teachings of the claim and the same information does not have to be buffered during the detection as the VAD receives plurality of frames with audio information.

Since claims 5 and 13 stand or fall with independent claim 1, 9, and 14 please see the arguments presented in claim 1, 9, and 14.

Claims 2, 3, 12, 15, and 16 are Rejected under 35 U.S.C. §103 under Gentle in view of Dowdal in view of Clemm

Since the claims stand or fall with independent claim 1, 9, and 14, please see the arguments presented in claim 1, 9, and 14.

Claims 8, 10, 11, and 20 are Rejected under 35 U.S.C. §103 under Gentle in view of Dowdal in view of Sih

Since the claims stand or fall with independent claim 1, 9, and 14, please see the arguments presented in claim 1, 9, and 14.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Paras Shah

01/21/2010

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Primary Examiner, Art Unit 2626

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